REMARKS

Upon entry of the Amendment, Claims 1-4 and 10-30 will be pending in the application.

Claims 13-21 and 24-28 have been withdrawn from consideration by the Examiner.

Claims 5-9 are canceled.

New independent Claims 29 and 30 are added. Support for Claim 29 can be found, for example, at page 15, lines 12-18 in the specification as originally filed (see [0055] of US 2003/0000619 A1) and supported by Example 26. Claim 30 is supported, for example, for Examples 1-27 of the specification as originally filed. No new matter is added.

Claims 2-4, 10-12, 22, and 27-28 have been amended to change dependencies as viewed in the Amendment to the Claims.

Entry of the Amendment along with reconsideration and review of the claims on the merits are respectfully requested.

Response to Claim Rejections - 35 U.S.C. § 103

A. Claims 1-10[1], 12, and 22-23 are rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Yoshikawa et al (U.S. Pat. No. 4,872,932) in view of Marshall et al (U.S. Pat. No. 4,397,985), for the reasons of record.

[1] It appears that the Examiner may have inadvertently included previously canceled Claims 5 and 8 in this rejection.

B. Claim 11 is rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Yoshikawa et al in view of Marshall et al, further in view of Shindo et al (U.S. Pat. No. 5,049,447), for the reasons of record.

Regarding Applicants' argument that Yoshikawa does not suggest the treatment of organic fibers, such that Marshall, which shows polyester yarn, has no relevance to Yoshikawa, the Examiner recognizes that Yoshikawa does not teach the treatment of organic fibers per se. However, the Examiner's position is that Yoshikawa discloses that the substrate can be a variety of materials used in the formation of tires, belts and hoses, and does not preclude the use of a substrate such as that claimed by Applicants. The Examiner cites Marshall as disclosing that polyester yarn is a substrate suitable in the formation of rubber composite materials used in the formation of tires and belts.

Regarding Applicants' argument that Marshall combined with Yoshikawa still does not teach the present invention because if polyester yarn were to be treated by the method of the present invention, the inner surface of the polyester yarn would not be sufficiently treated, the Examiner responds that the present claims are not limited to any amount or degree of fiber treatment. The Examiner also cites Marshall as teaching that its fibers are treated with the cobalt containing coating before being formed into a cord.

The Examiner's position remains that the combined teachings of Yoshikawa in view of Marshall, and Yoshikawa in view of Marshall and further in view of Shindo, would have rendered obvious the present invention.

Applicants respond as follows.

As previously noted, Claims 1 and 12 are amended. Claim 1 clarifies that the fiber aggregate comprises a single filament or ten pieces or less of filaments.

Claim 12 is amended to depend on new Claim 30 and to clarify that it is the rubber-reinforcing fiber of Claim 30 which may be any of the listed short fibers.

Applicants traverse the obviousness rejection on the basis that one would not be motivated to combine Yoshikawa with Marshall. Furthermore, Applicants supplement previous remarks that the combination of Yoshikawa and Marshall still fails to achieve the present invention.

Applicants' rubber reinforcing fibers are not rendered obvious by Marshall's treated polyester yarn, and an ordinary skilled artisan would not have been motivated to combine Marshall's conventionally known polyester yarn in Yoshikawa's rubber composite material in order to achieve the present invention.

Yoshikawa states, "The present method allows for bonding into a composite structure of materials of the type, shape, and size which are otherwise difficult to bond to a rubber composition in the prior art." (see column 4, lines 42-45), and also states, "The substrates which can be used in the practice of the present invention are not particularly limited with respect to their material type, shape, and size." (see column 5, lines 18-20).

However, Yoshikawa gives specific examples of substrate materials:

> "Examples of the materials of which the substrates are made up include metals such as steel, stainless steel, aluminum, copper, and copper alloys; thermoplastic resins, for example, polyesters such as polyallylate, polyethylene terephthalate, polybutylene terephthalate, and polyoxybenzoyl, polyamides such as 6-nylon, 6,6-nylon, and aromatic polyamides, polyethers such as polyacetal, polyphenylene oxide, polyether ether ketone, and polyphenylene sulfide, polysulfones such as

> polysulfone and polyether sulfone, polyimides such as polyimide, polyether-imide, polyamide-imide, and polybismaleimide, and polycarbonates; thermosetting resins, for example, formaldehyde resins such as phenol resins and melamine resins, allyl resins such as diallyl phthalate, epoxy resins, silicone resins, and polyurethane resins; and polymer blends of an unsaturated polyester resin and a vinyl ester resin as frequently used in fiber-reinforced plastics; ceramics and glass. The particular material, shape, and size of the substrate used may be properly selected depending on the intended application." (see Yoshikawa, column 5, lines 21-41).

Applicants submit that the above passage in Yoshikawa refers to resins, ceramics and glass, but not to fibers. Accordingly, Applicants submit that Yoshikawa does not suggest the treatment of organic and inorganic fibers.

Therefore, a skilled artisan would not be motivated to combine Yoshikawa with Marshall (US 4,397,985) and with Shindo (US 5,049,447), which show a dipping treatment of polyester multifilaments, as these secondary references have no relevance to Yoshikawa. Furthermore, regarding amended Claim 12, Yoshikawa, Marshall and Shindo are silent about short fibers.

In the present invention, a rubber-reinforcing fiber in Claim 1 is a fiber aggregate comprising a single filament, or ten pieces or less of filaments, since the permeation of the dry-plating particles through the fiber aggregate becomes low when the number of filaments exceeds ten, thereby making the formation of a uniform plating difficult to fail to exhibit a sufficient adhesion strength, such as in the case of a fiber aggregate, such as a twisted cord (see page 17, lines 5-9).

In comparison to conventional multifilament cords, Applicants recognized that monofilament cords would be advantageous in cost because the twisting process can be omitted to reduce production cost; a monofilament cord is higher in elasticity and lower in shrinkage

than a twisted cord; therefore, the weight of a tire, for example, can be reduced by using monofilament cords (page 5, lines 2-12). However, Applicants recognized that to apply a monofilament cord to tire, it would first be necessary to ensure a sufficient fatigue resistance of the monofilament cord under compression stress (page 5, lines 28-30). Applicants subsequently discovered the present invention which provides a rubber-reinforcing organic or inorganic fiber which is free from sticking between fibers, capable of forming a firm adhesion to rubber, and excellent in the fatigue resistance and in endurance (page 9, lines 17-20).

Accordingly, Applicants respectfully request reconsideration and withdrawal of the obviousness rejections.

New Claims 29-30

Regarding new independent Claims 29 and 30, the combination of Yoshikawa with Marshall and Shindo fails to render obvious the present invention of these claims as well.

In the present invention, rubber-reinforcing fibers, including glass wool, nonwoven fabric, knitted fabric, net fabric and short fiber, having dry-plating a coating layer of 10 Å to 40 μm thick are treated uniformly on the entire surface of the individual filaments (see page 15, lines 20-24 in the specification, or [0057] in US 2003/0000619 Al). Accordingly, the rubber-reinforcing fibers of the present invention have excellent fatigue resistance.

Further, frictional electricity rarely occurs on the surface of the rubber-reinforcing fibers, including glass wool, nonwoven fabric, knitted fabric, net fabric and short fiber, which avoids the entanglement of the rubber-reinforcing fibers and results in excellent fatigue resistance.

That is, when the rubber-reinforcing short fiber is made of a high-melting, high-modulus organic fiber material, an excellent interfacial adhesion between fiber and rubber is obtained. In addition, since the sticking between the short fibers due to adhesive treatment of the fiber material and the entanglement of the short fibers due to frictional electricity rarely occur, the short fiber is advantageous in workability. Further, the short fiber is excellent in quality maintenance of products because the reduction in the fatigue resistance during the use of rubber articles due to an insufficient dispersion of the short fiber for reinforcing the rubber articles is minimized. (see page 24, line 24 to page 25, line 2 in the specification, or [0107] of US 2003/0000619 Al). This paragraph only mentions about short fibers. However, Applicants submit that the rubber-reinforcing fibers of glass wool, nonwoven fabric, knitted fabric, net fabric obtain the same effect.

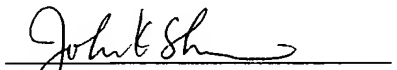
Accordingly, Applicants respectfully request consideration and allowance of new Claims 29-30 and claims dependent therefrom.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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